

- 1 • Verizon VA's cost study also improperly includes Digital Cross-connect
2 System ("DCS") on most dedicated transport circuits even though the
3 competitive local exchange carrier ("CLEC") may not want this element.
4 Consistent with the FCC's Advanced Services Order and with the terms of
5 the Verizon VA/AT&T and Verizon VA/MCImetro interconnection
6 agreements, DCS should be treated as a separate unbundled element,
7 which a CLEC has the option to purchase based on cost and network
8 considerations.
- 9 • Verizon VA's installation factor for transport equipment is significantly
10 higher than even Verizon's own data demonstrates to be reasonable.
- 11 • Verizon VA has failed to provide rates for DS1 to DS0 and DS3 to DS1
12 multiplexing even though this network element is essential for dedicated
13 transport and is normally included in Verizon's cost studies for interoffice
14 dedicated transport.
- 15 • Verizon VA has also significantly overstated the costs for common
16 transport. Verizon VA has based the cost for common transport on its
17 dedicated transport cost study. Thus, errors described in our testimony
18 relating to dedicated transport must also be corrected with regard to
19 common transport costs.

B. VERIZON'S CLAIMED INTEROFFICE DEDICATED TRANSPORT COSTS

1. CORRECTION OF PORTS PER NODE CALCULATION

Q. HOW DOES VERIZON PROVIDE FOR INTEROFFICE DEDICATED TRANSPORT IN ITS COST STUDY?

A. In conducting its purported forward-looking economic cost study, Verizon's cost model uses SONET rings to provide interoffice transport. SONET rings are a technology that allows for electrical (DS0, DS1, DS3, and STS1) and optical (OC-3 and OC-12) circuits to be easily added to or removed from a transport ring that provides protected (or redundant) transmission between nodes on the ring. SONET nodes are the point where dedicated transport circuits enter and exit the fiber optic ring. The terminal equipment at these SONET nodes convert electrical signals into optical signals, when needed, and multiplexes these signals up to the appropriate speed. SONET terminal equipment comes in several different bandwidths or "speeds." OC-48 SONET equipment is able to transmit signals at approximately 2448 megabits per second. This is the SONET ring transmission speed Verizon has used in its cost study for interoffice facility cost. The capacity of an OC-48 SONET depends on the type of SONET ring that has been deployed. Verizon's assumption that the capacity of an OC-48 SONET ring of 48 DS3s is reasonable, although the capacity can actually be greater.

Q. WHAT IS THE RELATIONSHIP BETWEEN THE OC-48 SONET RING USED BY VERIZON AND THE NUMBER OF NODES ON THE SONET RING?

A. For every DS3 that is placed on a SONET ring, two ports must be used for the DS3 circuit – one at each of the nodes over which dedicated transport circuit is

1 moving. In other words, if the capacity of an OC-48 SONET ring were
2 determined to be 48 DS3s, then 96 ports would be needed for the 48 DS3 circuits
3 operating between the nodes on that SONET ring. A key issue is the number of
4 nodes on a SONET ring, but the general principle is that the larger the number of
5 nodes on the ring serving these 96 ports, the lower the utilization of any one of
6 those individual nodes. Each of the OC-48 SONET nodes has the ability to
7 actually terminate 48 DS3 circuits. As such, as more nodes are added to each
8 SONET ring, the potential utilization of the SONET nodes on those rings
9 decreases.

10 **Q. DOES VERIZON'S ASSUMPTION CONCERNING THE NUMBER OF**
11 **NODES AND PORTS ON A SONET RING RESULT IN REASONABLE**
12 **COSTS FOR DEDICATED TRANSPORT?**

13 A. No. Verizon has significantly understated the number of ports that must be used
14 at each SONET node to provide 48 DS3 circuits on the SONET ring.¹⁰¹ As a
15 result, Verizon has significantly overstated its investment per DS3, which results
16 in substantially inflated dedicated interoffice transport costs.

¹⁰¹ Verizon has also significantly understated the number of ports that must be used at each SONET node to provide 48 STS1 circuits and 16 OC-3 circuits.

1 **Q. IN WHAT WAY HAS VERIZON SIGNIFICANTLY UNDERSTATED THE**
2 **NUMBER OF PORTS USED ON ITS SONET RINGS IN ITS COST**
3 **STUDY?**

4 A. Verizon indicated in its interoffice dedicated transport cost study that the capacity
5 of an OC-48 Bi-directional Line Switched Ring (“BLSR”) is 48 DS3s.¹⁰² In
6 addition, Verizon asserts that it has on average 3.79 nodes per SONET ring.¹⁰³ As
7 we explained above, to support 48 DS3s within a SONET ring, 96 ports must be
8 available within the SONET nodes because each DS3 must have a port to enter
9 the SONET ring at one node and a second port to depart the SONET ring at
10 another node.¹⁰⁴ Consequently, given Verizon’s assumptions of 48 DS3s per
11 SONET ring and 3.79 nodes per SONET ring, each node must have on average

¹⁰² Workpaper Part D-2, VA PART D-2 IOF_MODEL Workbook, “Parameters” Spreadsheet, Row 373. The assumption of 48 DS3s per OC-48 BLSR is actually a conservative estimate. In reality, BLSR SONET rings can support more than 48 DS3s depending on the number of nodes on the ring and on the network engineering applied. The engineering rule is that no cross section between two nodes on the SONET ring can exceed 48 DS3s. This engineering rule, though, can permit more than 48 DS3s on the SONET ring as a whole. In short, while the remainder of this testimony will accept Verizon’s assumption of 48 DS3s per OC-48 SONET ring (but account for this assumption correctly), the Commission should realize that this is a very conservative assumption from a cost standpoint.

¹⁰³ Workpaper Part D-2, VA PART D-2 IOF Eng_SUP Workbook, Cell B14. In other proceedings (*e.g.*, New York and Massachusetts), Verizon has explicitly stated the average number of ports per ring in the interoffice dedicated transport cost studies. Verizon then multiplies this value of ports by the average distance between nodes to arrive at an average distance per ring. In Verizon’s FCC filing, Verizon failed to state explicitly the average number of ports per ring or the average distance between nodes but instead embedded these two pieces of information in Cell B14. The 3.79 value, however, compares reasonably with the values found in New York (3.76 nodes per ring) and Massachusetts (3.83 nodes per ring).

¹⁰⁴ The discussion of the number of nodes per ring is to the “logical” number of nodes that are on a particular SONET ring. Often there will be many more “physical” nodes on fiber rings where the fiber passes through the node, but SONET electronics are not placed on that node. The important factor for developing the number of ports per node is the number of “logical” nodes per ring that have electronics at those nodes.

1 approximately 26 ports.¹⁰⁵ Verizon's interoffice dedicated transport cost study,
2 however, assumes only 16 ports per node, understating the number of required
3 ports in its cost study by 38.5%.¹⁰⁶

4 **Q. HOW DID VERIZON MAKE ITS FLAWED CALCULATION OF**
5 **INTEROFFICE DEDICATED TRANSPORT COSTS?**

6 A. It appears that Verizon took the 48 DS3s per SONET ring and divided by three
7 nodes (the more conservative of the whole number of nodes comprising the
8 average of 3.79 nodes) and calculated 16 ports. Verizon's flawed methodological
9 approach, however, failed to account for separate entry and exit ports on different
10 nodes on the ring. Thus, if a DS3 uses 16 ports to enter the ring on one node it
11 also needs 16 ports on a separate node to exit the ring for a total of 32 required
12 ports.¹⁰⁷

¹⁰⁵ Mathematically, the 26-port figure is derived as follows: The 3.79 nodes per ring average indicates that Verizon's SONET rings generally have either 3 or 4 nodes per ring. For the 3-node rings, assuming 96 ports are available on the ring, there are on average 32 ports per node (96 ports / 3 nodes). For the 4-node rings, again assuming 96 ports on the ring, there are on average 24 ports per node (96 ports / 4 nodes). Given the average of 3.79 nodes per ring, the 3-node scenario would occur 21 percent of the time and the 4-node scenario 79 percent of the time. Using this distribution to determine the number of ports per node yields a total of 25.68 ports per node ($32 * 0.21 + 24 * 0.79$). We have rounded this value to 26 ports for our analysis.

¹⁰⁶ Verizon uses a 75 percent fill factor in developing the cost for interoffice dedicated transport. This factor has not been altered in the restated cost study. However, Verizon's understatement of the capacity of the OC-48 is only compounded by this fill factor.

¹⁰⁷ In another proceeding, Verizon has claimed that the forward-looking number of nodes per ring should be six, thereby supporting the 16 ports for node that Verizon was using. (See State of New York Public Service Commission, *Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements*, Case 98-C-1357, Workpaper Part C-1 – Section 1.0 to the Panel Testimony of Bell Atlantic – New York on Revised Costs and Rates for Unbundled Network Elements (footnote continued))

1 **Q. HOW DOES THIS FAILURE TO INCLUDE THE APPROPRIATE**
2 **NUMBER OF PORTS PER NODE IMPACT VERIZON VA'S COST**
3 **ANALYSIS?**

4 A. The bulk of the cost associated with SONET rings is fixed based on physically
5 establishing the SONET node. As a result, the vast majority of the investment is
6 incurred whether one DS3 or 48 DS3s are in service at the particular SONET
7 node. In its cost analysis, Verizon averages the total cost of the SONET ring
8 across the number of ports that are available at the SONET node. Under
9 Verizon's cost analysis, the lower the number of ports, the greater the cost; the
10 greater the number of ports, the lower the cost. Thus, the average number of ports
11 per node must be accurately determined so as to not misstate the average
12 investment per port. By understating the number of ports per node by 38.5% for
13 DS3s, Verizon has significantly overstated the investment per DS3 in its cost
14 calculation. As a result, Verizon's claimed interoffice dedicated transport costs
15 are similarly inflated.

and Related Wholesale Services, February 24, 2000, p. 6 (line 372). [Exhibit 323 in the New York UNE cost proceeding] This document shows that Verizon did not report that it was using six nodes per ring, but rather 3.79 nodes per ring.) Verizon's claim is simply not plausible. Given the growth in data traffic and related growth in transport necessary to support such traffic, the forward-looking impact on SONET network engineering is to realize *smaller* numbers of nodes per ring – not *larger* number of nodes per ring. It simply is not reasonable for Verizon to argue that the forward-looking number of nodes per ring is higher than approximately 3.79.

Some networks are migrating away from OC-48 transport to OC-192, effectively quadrupling the capacity of the transport network. In doing this, ILECs can increase the number of nodes per ring, but the unit cost per DS3 is significantly reduced as a result of the increased number of ports available in moving from OC-48 to an OC-192 network.

1 **Q. IN YOUR RECALCULATION OF VERIZON’S INTEROFFICE**
2 **DEDICATED TRANSPORT COSTS, DID YOU USE THE 3-NODE**
3 **ASSUMPTION USED BY VERIZON?**

4 A. No. This assumption is not consistent with 3.79 nodes per SONET ring average
5 used by Verizon in its cost study. The 3.79 nodes per ring is an appropriate figure
6 that should be used consistently in the Verizon cost study.

7 **Q. DO THE INFLATED DS3 COST CLAIMS AFFECT VERIZON’S**
8 **CLAIMED COSTS FOR OTHER SPEEDS OF DEDICATED**
9 **TRANSPORT?**

10 A. Yes, Verizon used the DS3 Dedicated Transport cost study as the basis for the
11 DS1 and DS0 Dedicated Transport cost studies, and this flawed analysis likewise
12 resulted in inflated cost claims for DS1 and DS0 dedicated transport.
13 Consequently, the required correction to Verizon’s DS3 Dedicated Transport cost
14 study must also be made in these downstream cost studies. Verizon also made the
15 same type of error in its STS-1 and OC3 Dedicated Transport cost studies. The
16 correct number of ports per node for these speeds of dedicated transport using the
17 approach detailed above for DS3s is 26 and nine, respectively for the STS-1 and
18 OC3 Dedicated Transport cost studies.¹⁰⁸ Instead, Verizon incorrectly used 16
19 and six, respectively, which substantially inflated its claimed costs.

¹⁰⁸ An OC-48 SONET ring has a capacity of 48 STS-1 circuits and thus requires 96 STS-1 ports on the nodes of the SONET ring. An OC-48 SONET ring has a capacity of 16 OC-3 circuits and requires 32 OC-3 ports on the nodes of the SONET rings. An OC-48 SONET ring has a capacity of four OC-12 circuits and requires eight OC-12 ports on the nodes of the SONET rings. The remaining calculations to determine the number of ports per node for the SONET rings are identical to those outlined for the DS3 ports.

Q. COULD YOU PLEASE SUMMARIZE THE IMPACT OF THIS CORRECTION IN VERIZON'S COST STUDY FOR THE VARIOUS FORMS OF DEDICATED TRANSPORT?

A. Yes. The following table sets forth the average investment per port using Verizon's incorrect analysis and the restatement that we have done using appropriate assumptions of the numbers of required nodes and ports for each of the various forms of dedicated transport.¹⁰⁹ The average investment uses the same split between Fujitsu and Lucent equipment as set forth in Verizon's original cost study.

Port Type	Corrected Investment Level for Verizon's Cost Study	Verizon's Claimed Investment Level
OC-48 – OC-3 Ports	\$8,828.59	\$13,078.47
OC-48 – STS-1 Ports	\$2,751.91	\$4,351.86
OC-48 – DS3 Ports	\$2,730.58	\$4,317.20

2. CORRECTION TO PERMIT THE CLEC ELECTION OF DCS

Q. WHAT IS DCS?

A. DCS is an acronym for "Digital Cross-connection System." DCS allows for telecommunications providers to electronically cross connect different speeds of dedicated transport. For example, this piece of equipment allows the telecommunications carrier to take multiple DS1 dedicated transport circuits, entrance facilities, or loops and place them onto a DS3 circuit that can then be

¹⁰⁹ Unlike Verizon, which divided three nodes by the 48 DS3s, we used the more accurate 3.79 node average provided by Verizon.

1 carried to another location. This is also referred to as “grooming.” Other
2 technology (e.g., ATM switching) is able to perform many of the same functions
3 as DCS with a much lower level of investment. As such, DCS is normally and
4 economically used when the electronic capability available with DCS can best be
5 put to use (e.g., when many changes are expected in the circuits connecting two
6 locations or when the ability to re-provision circuits across different high speed
7 transport is important). ILECs choose when and where to use DCS in dedicated
8 transport circuits based on cost and performance trade-offs. CLECs should have
9 the same opportunity to make this choice through unbundling.

10 **Q. HOW HAS VERIZON COSTED AND PRICED DCS?**

11 A. Verizon has averaged the cost of DCS into its prices for interoffice transport.

12 **Q. IS THIS APPROPRIATE?**

13 A. No. ILECs choose when and where to use DCS in dedicated transport circuits
14 based on cost and performance trade-offs. With unbundling, CLECs should have
15 the same opportunity to decide when and where to use DCS in dedicated transport
16 circuits.

17 **Q. DID THE FCC FIRST REPORT AND ORDER PROVIDE THAT ILECS**
18 **SHOULD OFFER DEDICATED TRANSPORT AND DCS SEPARATELY?**

19 A. Yes. The FCC in its *First Report and Order* specifically refers to the unbundling
20 of DCS from dedicated transport:

21 Accordingly, we conclude that the section 251(d)(2)(B)
22 requires incumbent LECs to provide access to shared
23 interoffice facilities and dedicated interoffice facilities
24 between the above-identified points in incumbent LECs’
25 networks, including facilities between incumbent LECs’

1 end offices, new entrant's switching offices and LEC
2 switching offices, and DCSs. We believe that access to
3 these interoffice facilities will improve competitors' ability
4 to design efficient network architecture, and in particular, to
5 combine their own switching functionality with the
6 incumbent LEC's unbundled loops.¹¹⁰

7 The FCC required that the new entrant be permitted to have access to
8 DCS. Simply giving the CLEC access to the DCS equipment does not allow the
9 ILEC to make its use mandatory and include it as an element in its cost study.
10 The CLEC is free to elect not to purchase this element, as other technology
11 affords other alternatives for accomplishing the same functionality as DCS, in a
12 much less costly manner (*e.g.*, ATM switching).

13 **Q. DOES VERIZON PROVIDE ACCESS TO DCS ON A SEPARATE BASIS**
14 **ALREADY?**

15 A. Yes. Verizon has a Special Access Tariff (Tariff No. 1) that provides access to
16 DCS functionality known as IntelliMux (see § 7.2.12). This service permits
17 "allows point-to-point rerouting of customer...facilities."¹¹¹ Moreover, this tariff
18 states that the price for this DCS functionality is based on the type of port that is
19 acquired – Voice Grade, DS1, or DS3.¹¹² As such, if the customer wants to
20 connect DS3 Special Access Service to the DCS, the customer must purchase a
21 DS3 network access port at the DCS. In short, this is the appropriate approach to

¹¹⁰ *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98, FCC First Report and Order, FCC Docket No. 96-325, Released August 8, 1996, ¶ 447.

¹¹¹ Verizon Special Access Tariff FCC No. 1, § 7.2.12(E).

¹¹² Verizon Special Access Tariff FCC No. 1, § 7.2.12(F).

1 establish costs for interoffice dedicated transport for unbundling. Moreover, the
2 FCC explicitly requires that the incumbents make DCS available in the same
3 manner for unbundling that it makes it available for special access.¹¹³

4 **Q. DO THE INTERCONNECTION AGREEMENTS BETWEEN AT&T AND**
5 **VERIZON, AND WORLDCOM AND VERIZON GIVE THE CLECS THE**
6 **OPTION OF PURCHASING DCS WITH DEDICATED TRANSPORT?**

7 A. Yes. Attachment 2 § 10.3 of the agreement between AT&T and Verizon provides
8 that dedicated transport includes DCS as an *option* where available. Similarly,
9 Attachment 3, § 10.2.4 of the agreement between WorldCom subsidiary
10 MCImetro Access Transmission Services, Inc. and Verizon requires Verizon to
11 “offer DCS and multiplexing, both with and separately from Dedicated
12 Transport.”

13 **Q. DOES THE NETWORK CONFIGURATION THAT VERIZON IS USING**
14 **PERMIT IT TO SEPARATE DCS FROM THE DEDICATED**
15 **TRANSPORT?**

16 A. Yes. Based on the diagrams provided by Verizon with its cost study, Verizon
17 always places DSX cross-connect points on each side of the DCS. As such, the
18 dedicated transport, which appears at the DSX, can be readily separated from the
19 DCS, which also appears at the DSX, so that the CLEC can either purchase
20 dedicated transport with DCS (if DCS is available) or without DCS.

¹¹³ FCC *First Report and Order*, FCC Docket No. 96-325, ¶ 444.

1 **Q. HOW HAVE YOU RECALCULATED VERIZON’S COST STUDY TO**
2 **CORRECT THIS ERROR?**

3 A. We have stated the cost of DCS as a separate element. Effectively, we have taken
4 Verizon’s investments for DCS already included in its dedicated transport cost
5 studies and separately developed the cost for this element based on the various
6 port types available on DCS. We have made no underlying changes to Verizon’s
7 cost for DCS.

8 **3. DEVELOPMENT OF MULTIPLEXING RATES**

9 **Q. DID VERIZON PROPOSE A RATE FOR MULTIPLEXING IN THIS**
10 **PROCEEDING?**

11 A. No.

12 **Q. DID VERIZON PROVIDE UNDERLYING COSTS AND INVESTMENT**
13 **DATA FROM WHICH RATES COULD BE GENERATED?**

14 A. Yes. Verizon included the underlying equipment investment cost in its filing for
15 Virginia. However, Verizon has not converted these equipment investment costs
16 into proposed rates for Multiplexing.

17 **Q. IS IT UNUSUAL THAT VERIZON DID NOT PROVIDE A COST FOR**
18 **MULTIPLEXING?**

19 A. Yes. In recent UNE cost proceedings in New York and in Massachusetts, Verizon
20 provided costs for these elements in its cost studies and proposed rates for
21 Multiplexing to those respective commissions.

22 **Q. WHY ARE MULTIPLEXING RATES IMPORTANT?**

23 A. Multiplexing enables the CLEC to take entrance facilities at lower transport
24 speeds (*e.g.*, as DS1) and combine these together through unbundled access to

1 multiplexing to take advantage of higher speed interoffice dedicated transport.
2 Without Multiplexing, CLECs will be severely limited in the manner in which
3 they can utilize interoffice dedicated transport.

4 **Q. HOW HAVE YOU APPROACHED VERIZON'S FAILURE TO PROVIDE**
5 **MULTIPLEXING RATES?**

6 A. Our restatement of Verizon's cost in this proceeding includes Multiplexing costs
7 in two forms: DS1 to DS0 Multiplexing and DS3 to DS1 Multiplexing, as
8 Verizon did in similar proceedings. We rely on the underlying equipment
9 investment costs Verizon has proposed in this proceeding before the FCC in
10 making this cost calculation. The details for how the calculations were made can
11 be found in our supporting work papers.

12 **4. CORRECTION TO TRANSPORT EQUIPMENT IN-PLACE**
13 **FACTOR**

14 **Q. FIRST, WHAT IS AN IN-PLACE FACTOR?**

15 A. In most instances, Verizon has determined the material investment for each of the
16 elements in its cost study. However, it has not separately identified the
17 installation and miscellaneous costs necessary to put the material investment
18 operation – or “in-place.” The in-place factor is intended to gross up the material
19 investment to represent the total installed cost of telecommunications equipment.

20 **Q. WHAT IS THE IN-PLACE FACTOR FOR TRANSPORT EQUIPMENT**
21 **PROPOSED BY VERIZON?**

22 A. Verizon has proposed an in-place factor for transmission equipment of 53.2% in
23 Virginia.

1 **Q. WHAT IS YOUR CONCERN WITH THE IN-PLACE FACTOR USED BY**
2 **VERIZON?**

3 A. First, Verizon has used an in-place factor that is not representative of TELRIC
4 cost for this element. In our experience, the in-place cost for transmission
5 equipment should be in the 30% range. Verizon has proposed an in-place factor
6 for transmission equipment of 53.2% in Virginia, which is significantly higher
7 than any cost-based in-place factor we have seen. Second, Verizon has not
8 separately identified the installation and miscellaneous costs that go into its in-
9 place factor. It is therefore impossible to verify Verizon's claimed costs.

10 **Q. WHAT IN-PLACE FACTOR WOULD YOU RECOMMEND FOR**
11 **VIRGINIA?**

12 A. In the New York UNE cost proceeding, Verizon presented a transmission
13 equipment in-place factor of 36.4%.¹¹⁴ There is no reason to believe that
14 installation costs in Virginia should be 46% greater than the 36.4% factor used in
15 New York. Verizon uses the same equipment vendors for transport equipment in
16 New York as in Virginia, so it is unlikely that such a large difference is
17 supportable. In short, in light of the large difference between Verizon's in-place
18 factor in Virginia as compared to New York, we would recommend that the
19 Commission use the value which Verizon presented in the New York proceeding.

¹¹⁴ State of New York Public Service Commission, *Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements*, Case 98-C-1357, Workpaper Part C-1 – Section 1.0 to the Panel Testimony of Bell Atlantic – New York on Revised Costs and Rates for Unbundled Network Elements and Related Wholesale Services, February 24, 2000, p. 3. Please note that this exhibit can also be found as Exhibit 323 in the New York UNE cost proceeding.

**C. SUMMARY OF CORRECTIONS TO VERIZON'S INTEROFFICE
DEDICATED TRANSPORT COST STUDY**

**Q. COULD YOU PLEASE SUMMARIZE THE INTEROFFICE DEDICATED
TRANSPORT RATES THAT RESULT FROM YOUR CHANGES TO
VERIZON'S COST STUDY?**

A. Yes. The following table summarizes the proposed rates for interoffice dedicated transport that are derived from our restatement of Verizon's cost study based on the criticisms and corrections identified above. These modifications also incorporate the annual cost factors and overhead factors addressed earlier in this testimony.

Rate Element	AT&T Monthly Rate	Verizon Monthly Rate
DS0 Dedicated Transport (Fixed)	\$20.23	NA
DS0 Dedicated Transport (Per Mile)	\$0.29	NA
DS1 Dedicated Transport (Fixed)	\$43.66	\$54.76
DS1 Dedicated Transport (Per Mile)	\$2.46	\$3.91
DS3 Dedicated Transport (Fixed) ¹¹⁵	\$198.88	\$499.44
DS3 Dedicated Transport (Per Mile)	\$33.53	\$59.11
STS-1 Dedicated Transport (Fixed) ¹¹⁶	\$200.24	\$502.99
STS-1 Dedicated Transport (Per Mile)	\$33.61	\$59.11
OC-3 Dedicated Transport (Fixed) ¹¹⁷	\$584.64	\$1,441.40
OC-3 Dedicated Transport (Per Mile)	\$102.95	\$178.07

¹¹⁵ It is difficult to precisely compare the AT&T/WorldCom and Verizon proposed rates for dedicated transport in that Verizon has averaged DCS investment into its rates rather than allowing CLECs to elect this UNE if it wants to as does Verizon. Nonetheless, for DS3 dedicated transport, allowing CLECs to elect DCS accounts for 12.3% of the investment difference between AT&T/WorldCom and Verizon.

¹¹⁶ For STS-1 dedicated transport, allowing CLECs to elect DCS accounts for 12.2% of the investment difference between AT&T/WorldCom and Verizon.

¹¹⁷ For OC-3 dedicated transport, allowing CLECs to elect DCS accounts for 14.4% of the investment difference between AT&T/WorldCom and Verizon.

OC-12 Dedicated Transport (Fixed)	\$2,578.58	\$4,113.45
OC-12 Dedicated Transport (Per Mile)	\$255.04	\$390.84
Multiplexing DS1 to DS0 – Common	\$167.56	N/A
Multiplexing DS1 to DS0 – Plug-In	\$6.98	N/A
Multiplexing STS-1/DS3 to DS1	\$259.36	N/A
Multiplexing STS-1/DS3 to DS1 – Plug-In	\$9.26	N/A
DCS DS1 Port	\$5.77	NA
DCS DS3 Port	\$109.40	NA
DCS STS-1 Port	\$109.40	NA
DCS OC-3 Port	\$328.19	NA

1

2

D. VERIZON'S CLAIMED COMMON (SHARED) TRANSPORT COSTS

3

Q. WHAT IS THE RELATIONSHIP BETWEEN THE COST FOR COMMON TRANSPORT AND INTEROFFICE DEDICATED TRANSPORT?

4

5

A. Common transport is closely linked to the costs for interoffice dedicated transport.

6

The trunks that are used to carry common transport are provisioned on dedicated

7

transport circuits. As such, the underlying cost for dedicated transport directly

8

relates to the costs that would be incorporated into the calculations for common

9

transport. Of course, other issues also come into play with common transport in

10

that the cost recovery for this element is not based on circuits, but on minutes. As

11

such, the assumptions related to the number of minutes that will pass across a

12

trunk provisioned over dedicated transport are critical factors in developing the

13

cost for this element.

14

Q. WHAT CONCERN DO YOU HAVE WITH VERIZON'S COMMON TRANSPORT COST STUDY?

15

16

A. Verizon used as the underlying cost element for common transport the costs from

17

the dedicated transport cost study for DS1 Dedicated Transport and STS-1

18

Dedicated Transport. Using these elements as the underlying cost for the

1 transport in common transport is appropriate, but Verizon's cost study for
2 common transport costs must be corrected to account for the same errors as in the
3 dedicated transport cost study.

4 **Q. COULD YOU PLEASE SUMMARIZE THE RESULTING RATES FOR**
5 **COMMON TRANSPORT BASED ON YOUR MODIFICATIONS TO**
6 **VERIZON'S COST STUDY?**

7 A. Yes. The resulting rate for common transport is \$0.000060 per minute of use –
8 fixed and \$0.000001 per minute of use per mile. This rate also reflects
9 adjustments to the annual cost factors and overhead factors that are addressed in
10 other sections of this rebuttal testimony.

11 **E. CONCLUSION**

12 **Q. PLEASE SUMMARIZE THIS PART OF YOUR TESTIMONY.**

13 A. Verizon has significantly overstated its forward-looking economic costs for
14 dedicated interoffice transport and common transport. For dedicated interoffice
15 transport, Verizon's understated the capacity of the SONET rings, thereby
16 significantly overstating the costs for the circuits riding those SONET rings;
17 improperly included DCS on most dedicated transport circuits regardless of
18 whether the CLEC elects this element or not; used an inflated installation factor
19 for transport equipment that is significantly higher than even Verizon has
20 previously suggested is reasonable; and failed to develop multiplexing cost for
21 DS1 to DS0 and DS3 to DS1 multiplexing. Finally, Verizon's cost for common
22 transport, which is based on its underlying dedicated transport cost study, must be
23 revised to correct the errors in that underlying study.

VI. ACCESS TO OSS COSTS

A. INTRODUCTION AND SUMMARY OF THIS PORTION OF THE TESTIMONY

Q. WHAT IS THE PURPOSE OF THIS PORTION OF YOUR REBUTTAL TESTIMONY?

A. In this section, we will rebut Verizon's Panel Testimony on Unbundled Network Element and Interconnection Costs. For certain of the adjustments proposed herein, we rely on concurrently filed reply testimony of AT&T/WorldCom witnesses Mr. Lee and Mr. Hirschleifer.

B. VERIZON'S "ACCESS TO OSS" CHARGE IS NEITHER COMPETITIVELY NEUTRAL NOR BASED ON FORWARD-LOOKING COSTS.

Q. PLEASE SUMMARIZE THE MAJOR CONCLUSIONS THAT YOU HAVE REACHED BASED ON YOUR REVIEW OF VERIZON'S ACCESS TO OSS TESTIMONY AND THE ASSOCIATED COST STUDIES.

A. With respect to Verizon's access to OSS cost studies and pricing recommendations, we have reached the following major conclusions:

- The one-time development costs in Verizon's "access to OSS" study are caused by the transition to a competitive environment, not by new entrants' orders for UNEs. Therefore, it is inappropriate to recover these costs solely from new entrants.
- Because new entrants incur costs for their own portion of the electronic gateway between their operation and Verizon's OSS, the simplest competitively neutral mechanism for cost recovery is to require each company to bear its own costs for access to OSS.

- 1 • The Commission should hold Verizon to a strict burden of proof in
2 justifying recovery claims for modifications to Verizon's OSS. Verizon
3 has not met this burden.
- 4 • If the Commission authorizes any explicit access to OSS charge, it should
5 be calculated as a competitively neutral surcharge on all Virginia
6 telecommunications users. Based on Verizon's reported access to OSS
7 costs, an eight-cent per month per line surcharge would be sufficient to
8 recover all of the alleged costs over a ten-year period.
- 9 • Even the eight-cent per month surcharge figure is likely too high, because
10 Verizon's access to OSS cost study reflects embedded, rather than
11 forward-looking costs, probably some double-counting with Verizon's
12 recurring costs, and the costs of potentially duplicative or obsolete
13 systems. Of course, if the Commission adopts our primary
14 recommendation to have each carrier bear its own access to OSS costs,
15 there is no need to resolve these issues because Verizon will bear any costs
16 attributable to its own inefficiencies.
- 17 • Ongoing OSS expenses are a normal cost of business and should be
18 recovered in the same way Verizon captures all normal forward-looking
19 recurring OSS expenses, through its annual cost factors.

1 **Q. WHAT DOES VERIZON PROPOSE FOR “ACCESS TO OSS”?**

2 A. Verizon proposes to apply a recurring “Access to OSS” charge of \$0.87 per month
3 per line to all UNE loops, UNE platforms and resale loops.¹¹⁸ Verizon designed
4 this charge to recover: “(1) initial development costs to make ... access to
5 Verizon VA’s operations support systems possible; and (2) the associated
6 recurring capital costs and ongoing maintenance expenses associated with
7 provisioning OSS Access on an ongoing basis.”¹¹⁹ We will address separately the
8 appropriateness of each of these categories of purported costs and Verizon’s
9 proposed recovery mechanisms.

10 **1. VERIZON’S PROPOSED ACCESS TO OSS CHARGE DOES**
11 **NOT RECOVER COMPETITION-ONSET COSTS IN A**
12 **NEUTRAL FASHION**

13 **Q. WHAT INITIAL DEVELOPMENT COSTS HAS VERIZON INCLUDED**
14 **IN ITS PROPOSED ACCESS TO OSS CHARGE?**

15 A. Verizon estimates that it has incurred \$227 million in one-time development costs
16 over its entire Verizon–East footprint¹²⁰ for which it seeks recovery over a ten-
17 year period. These one-time development costs account for 44% of Verizon’s
18 proposed Access to OSS charge. According to Verizon’s cost panel, these one-
19 time development costs include expenses associated with developing new system

¹¹⁸ Verizon has proposed a separate Line Sharing OSS charge of \$0.84 per line per month, which would apply to both line sharing and line splitting lines. The AT&T/WorldCom Panel on Non-Recurring Costs and Advanced Data Services addresses this proposed charge in its concurrently filed reply testimony.

¹¹⁹ Verizon Cost Panel Direct at 242-243.

¹²⁰ *Id.* at 245.

1 interfaces or gateways and modifying the underlying core systems to
2 accommodate the new interfaces/gateways (including capitalized software costs),
3 as well as expenses associated with defining the methods and procedures for OSS
4 access.¹²¹

5 **Q. IS IT APPROPRIATE TO RECOVER THESE INITIAL DEVELOPMENT**
6 **COSTS IN UNE CHARGES, AS VERIZON PROPOSES?**

7 A. No. The initial development costs that Verizon included in its study are costs
8 attributable to the transition from a monopoly to a competitive environment. The
9 need to develop gateways arises from the legal requirement that incumbent local
10 exchange carriers, who previously operated in a single carrier environment, open
11 their existing OSS to access by multiple, competing carriers. In this case, the
12 government mandate results in what can be called “competition-onset costs,”
13 (sometimes known as competition implementation costs). By attributing these
14 costs solely to new entrants, Verizon, in effect, misidentifies the cost causers.¹²²

15 **Q. WHY IS IT INAPPROPRIATE FOR VERIZON TO RECOVER**
16 **COMPETITION-ONSET COSTS THROUGH UNE CHARGES?**

17 A. There are several reasons why the charges for unbundled network elements,
18 whether recurring or non-recurring charges, should not provide for the recovery of
19 Verizon’s competition-onset costs. First, such charges would create a formidable

¹²¹ See *id.* at 273.

¹²² In addition, Verizon has not distinguished between the costs to develop access to OSS for resale and those for unbundled network elements. Therefore, competitors that purchase only unbundled network elements would have to bear the costs of developing resale OSS that they could not possibly have caused.

1 barrier to entry by allowing Verizon, solely because of its control over bottleneck
2 monopoly inputs, to pass these costs on to new entrants who must also cover their
3 own competition-onset costs.

4 Second, to allow Verizon to pass these costs on to new entrants allows
5 Verizon to recover costs it inefficiently incurred. In this case, Verizon's
6 expectation that it would be able to pass along OSS development costs to
7 competitors created an incentive for it to comply inefficiently. Competitors
8 should not now be asked to bear the cost of that inefficiency.

9 Third, Verizon's one-time development costs are not the forward-looking
10 costs of providing an element, but rather costs Verizon has already incurred to
11 transition to a competitive market.

12 **Q. HOW WOULD ALLOWING VERIZON TO IMPOSE ITS**
13 **COMPETITION-ONSET COSTS ON NEW ENTRANTS CREATE A**
14 **BARRIER TO ENTRY?**

15 A. Verizon's methodology would make new entrants and their customers entirely
16 responsible for effectively paying the costs to make competition possible in
17 Virginia. Requiring new entrants to shoulder all of Verizon's OSS-related costs
18 for the transition to a multi-provider marketplace would impose a disproportionate
19 burden on new entrants (who themselves concurrently incur costs to exchange
20 pre-ordering, ordering, provisioning, maintenance and repair, and billing data with
21 Verizon electronically). If Verizon's proposal was adopted with respect to
22 gateway costs, *the new entrant would have to pay to develop two gateways, while*
23 *Verizon would pay for none.* That is, new entrants would have to bear costs that
24 Verizon did not and does not bear. This is the classic definition of a barrier to

1 entry. Such a barrier would deter the very competitive entry that the legal
2 requirement for access to Verizon's OSS is intended to foster.

3 **Q. HOW CAN THE COMMISSION AVOID CREATING SUCH A BARRIER**
4 **TO ENTRY?**

5 A. The Commission can avoid creating an unnecessary barrier to entry by properly
6 classifying Verizon's reported one-time developments costs for access to OSS as
7 competition-onset costs and recovering those costs in a competitively neutral
8 manner.

9 **Q. CAN YOU PROVIDE EXAMPLES OF COMPETITIVELY NEUTRAL**
10 **COST RECOVERY MECHANISMS BY WHICH TO RECOVER**
11 **COMPETITION-ONSET COSTS?**

12 A. Yes. The simplest and arguably most fair mechanism is to have each market
13 participant bear its own costs for the gateway systems that are necessary to permit
14 new entrants to access Verizon's OSS. As we have already noted, Verizon is not
15 the only carrier that incurs costs to create the necessary electronic gateways; every
16 new entrant that seeks to establish electronic access to Verizon's OSS also incurs
17 costs for its end of the gateway and for training its personnel on the use of
18 Verizon's systems. Thus, the Commission should not approve any explicit charge
19 for access to OSS, but rather *have Verizon and each entrant bear its own costs for*
20 *the gateway(s).*

21 In the alternative, the Commission could calculate a per-line surcharge that
22 would be the equivalent of recovering Verizon's prudently incurred access to OSS
23 costs from all Virginia end-users, whether they subscribe to Verizon's local
24 exchange service or that of a competitor. New entrants would pay this surcharge

1 to Verizon directly, on behalf of their end users. Verizon would have the option
2 of absorbing its pro rata share of the competition-onset costs or seeking authority
3 from state regulators to pass the surcharge along to its end-user customers in
4 Virginia.

5 **Q. IF EACH CARRIER PAYS THE COST OF CREATING ITS OWN**
6 **GATEWAY, CUSTOMERS OF VERIZON WHO CHOOSE NOT TO**
7 **SWITCH CARRIERS MAY BE ASKED TO BEAR COSTS FOR A**
8 **GATEWAY DESIGNED TO PROMOTE COMPETITION. IS THIS**
9 **REASONABLE?**

10 A. Yes. The creation of a gateway is a necessary condition for the move to a multi-
11 provider competitive local exchange market. All consumers, whether they choose
12 to change carriers or not, will be the beneficiaries of the existence of local
13 competition. Incumbents such as Verizon will have to compete on price and
14 service quality with new entrants; customers who remain with Verizon will
15 benefit from the lower prices, greater array of services, and more rapid
16 introduction of technology that competition will compel. Thus, because all
17 consumers – including those of Verizon – will benefit from ensuing competition,
18 it is perfectly reasonable to expect them to bear some of the cost of the gateway
19 that is a necessary adjunct to the creation of a competitive marketplace.

20 **Q. WOULD THE ALTERNATIVE END-USER SURCHARGE YOU**
21 **DESCRIBE IMPOSE A DISPROPORTIONATE BURDEN ON VERIZON**
22 **OR ITS VIRGINIA RETAIL CUSTOMERS?**

23 A. No, it would not. Once again, all Virginia customers benefit from the creation of
24 conditions that make local exchange competition in Virginia possible, whether
25 they are Verizon customers or customers of a new entrant. The requirement that
26 Verizon provide electronic access to its OSS to all local exchange providers is one

1 of the conditions necessary to make a multiple provider environment workable,
2 much like the requirement for number portability. The surcharge mechanism that
3 we have described is analogous to competitively neutral mechanisms that have
4 already been approved for the recovery of number portability costs, and does not
5 impose a disproportionate burden on Verizon. If anything, because new entrants
6 will have to bear all of their own costs for electronic access to OSS plus a share of
7 the surcharge, Verizon's burden under this method of cost recovery is
8 disproportionately light. That is one reason why our primary recommendation is
9 for each company to bear its own costs.

10 Moreover, the Commission should recall that Verizon stands to benefit
11 significantly from fulfilling the requirements of the competitive checklist for entry
12 into the interLATA market. Providing access to its OSS is one such requirement.
13 Passing through a small monthly surcharge to its local exchange customers is little
14 or no burden on Verizon compared to the advantage of interLATA entry.

15 **Q. WHAT LEVEL OF SURCHARGE WOULD BE NECESSARY TO**
16 **RECOVER THE COSTS IN QUESTION?**

17 A. For purposes of illustration, we will assume that all of the one-time costs reported
18 in Verizon's access to OSS cost study are prudently incurred costs that should be
19 eligible for recovery through an end-user surcharge (a conjecture that Verizon has
20 by no means proven, as we discuss below). We will further assume that the
21 surcharge will apply for ten years, the same period over which Verizon proposes
22 to amortize its one-time development costs for access to OSS. Given Verizon's